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THE BRITISH COLUMBIA
SKEENA COAL COMPANY

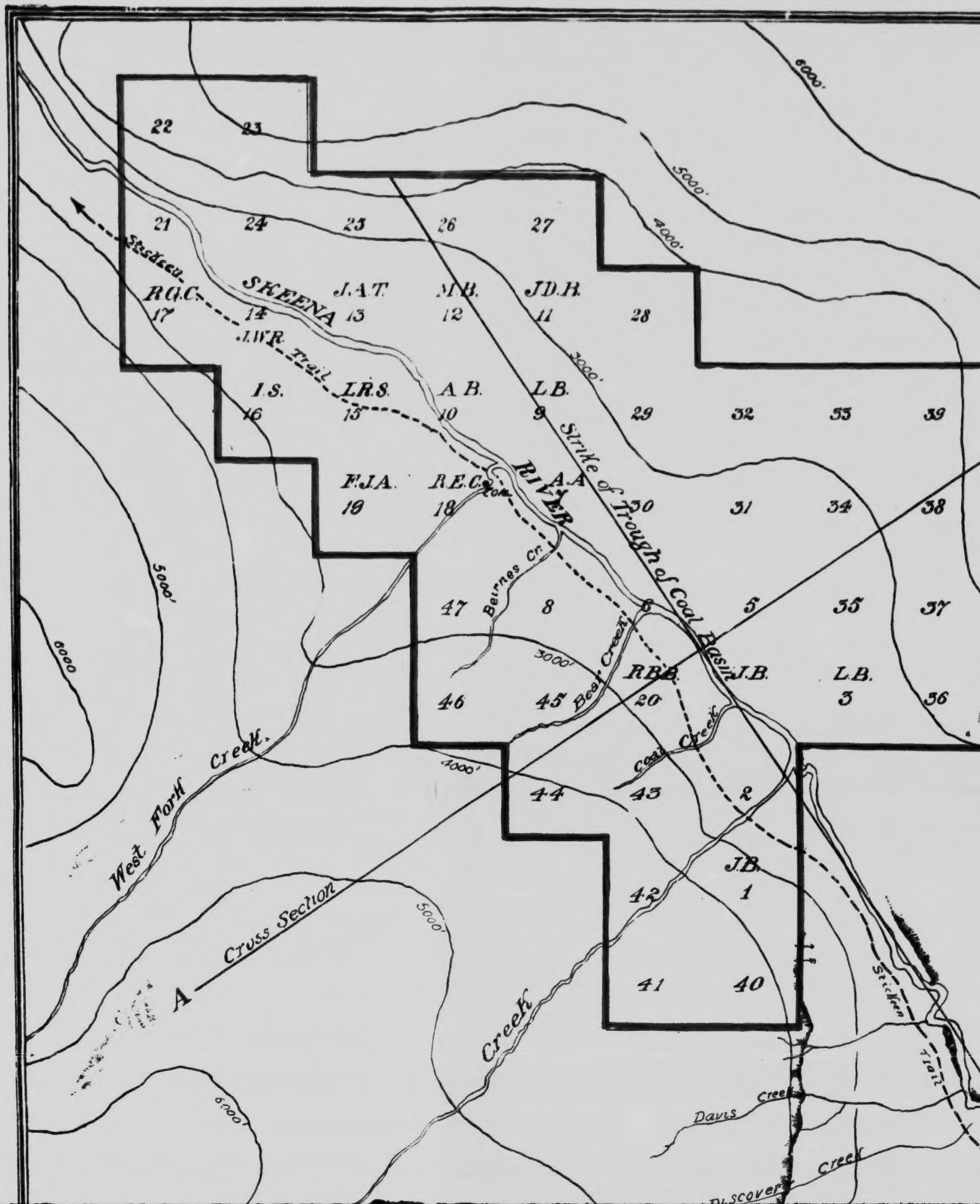
LIMITED



NO 9551
C.C.
B.T.
1911
Vol.

A





"BRITISH COLUMBIA SKEENA COAL CO. LTD., COAL PROPERTY"

— PLAN OF —

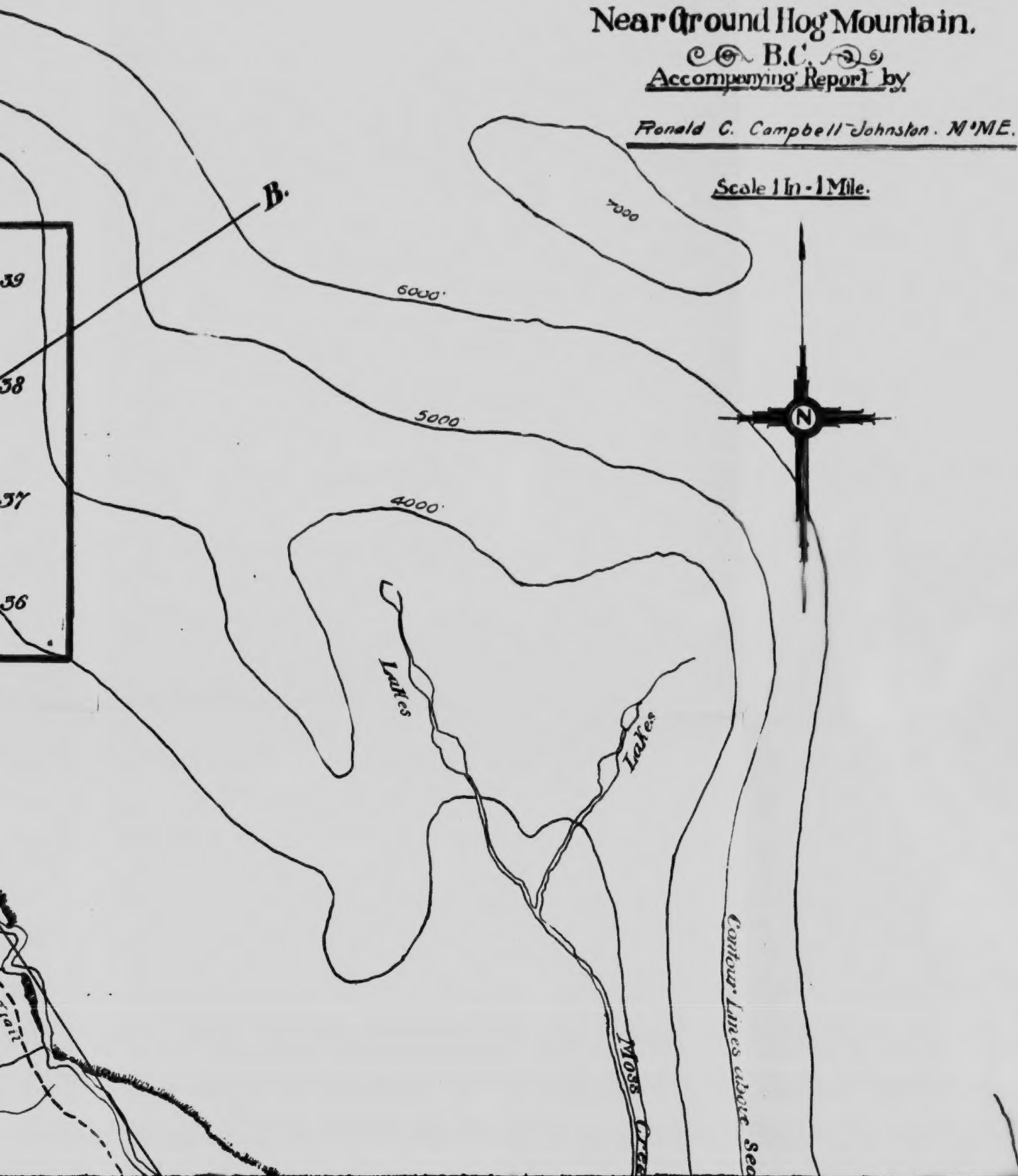
SKEENA RIVER COAL LANDS

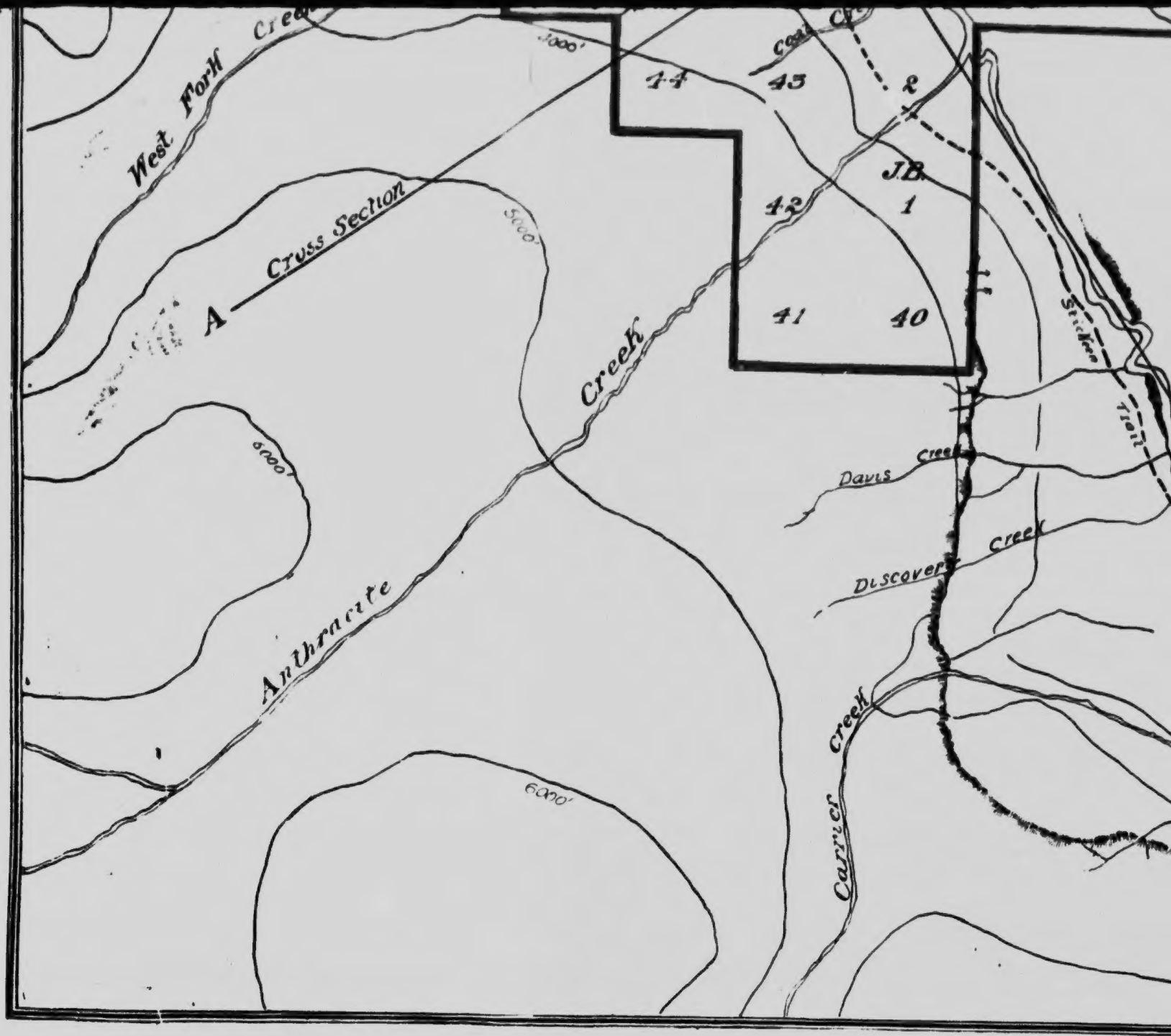
Near Ground Hog Mountain.

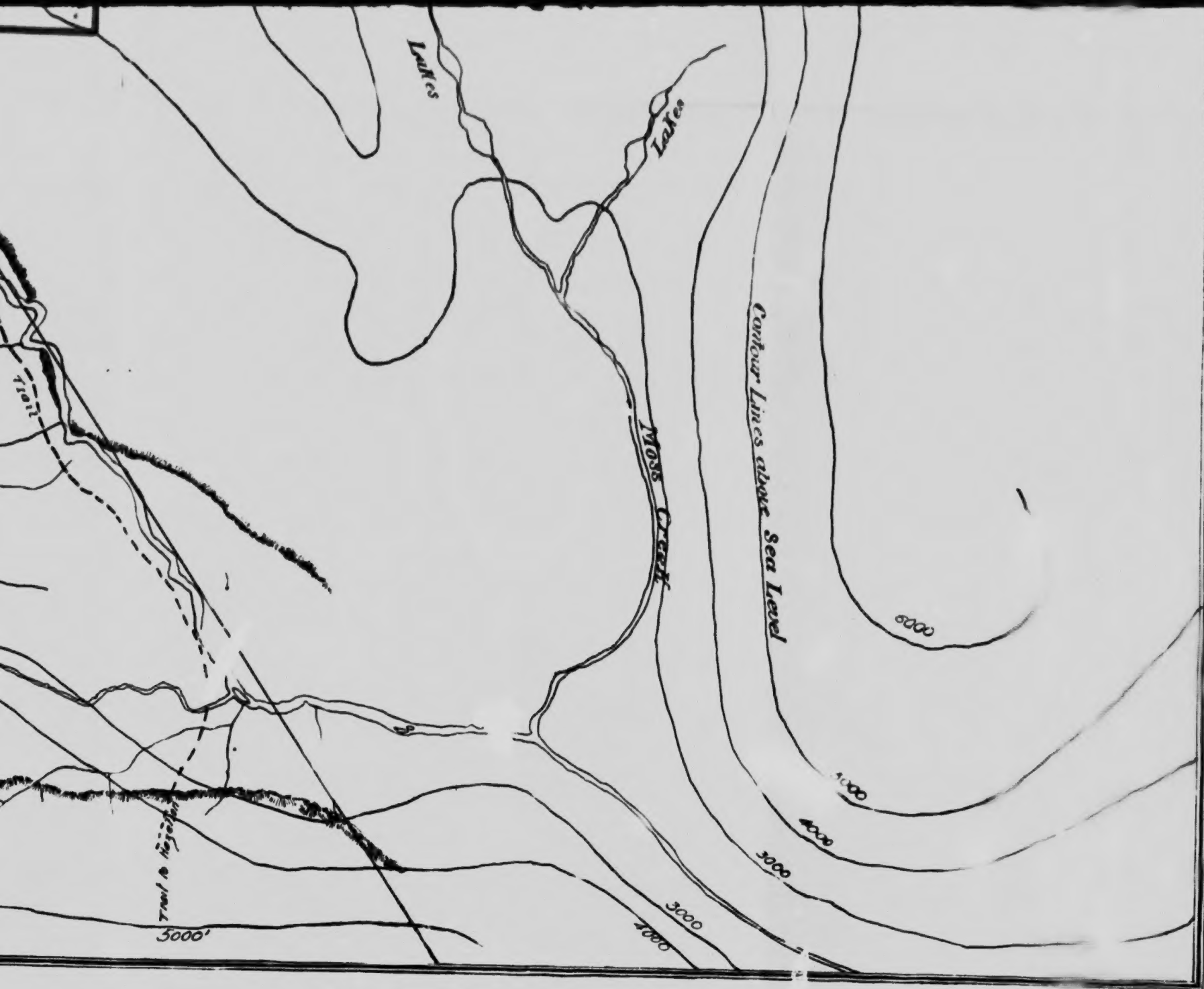
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Accompanying Report by

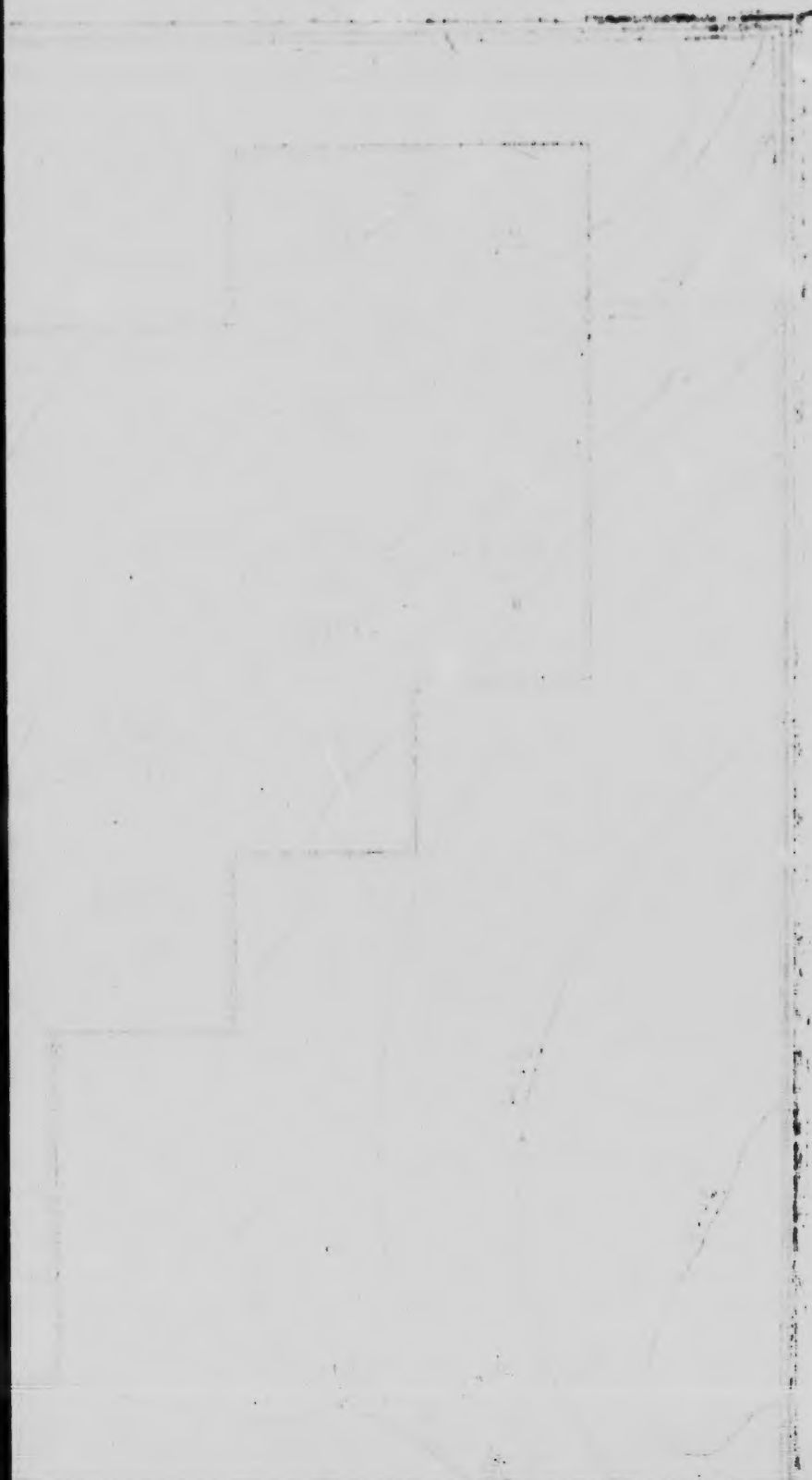
Ronald C. Campbell Johnston. M.M.E.

Scale 1 In. = 1 Mile.









*Can. The British Columbia
Skeena Coal Co.*

**The British Columbia Skeena
Coal Company, Limited**

CHRONICLE PRINT, QUEBEC

HD 9554

C24

B75

1911

fol.

The British Columbia Skeena Coal Company, Limited.

The British Columbia Skeena Coal Company, Limited, have acquired from the British Columbia Anthracite Syndicate, a syndicate formed in Quebec which has discovered, staked and now holds under lease from the Government of British Columbia 47 claims of Anthracite coal Lands, or about 30,000 acres, situated at Ground Hog Mountain, B.C., on the head waters of the Skeena River, about 150 miles north of Hazelton.

A mining engineer—Mr. Ronald C. Campbell-Johnston, of Vancouver, a Scotch mining and metallurgical engineer of long experience and a graduate of the London School of Mines, was sent by the syndicate in 1910 and again in 1911 to examine and report upon the deposit, and to give his opinion on the property.

His first report which is dated Vancouver, November, 1910, is a very voluminous one, forming 46 pages in book form, illustrated by maps and diagrams of seams and by photographs of some point in each of the 47 claims held by the syndicate.

The first seam of coal examined by Mr. Campbell-Johnston in 1910 is four feet in thickness, and contained, according to his report, 112 million tons of coal. There are other seams on the property and he is of opinion that "future further work (on other seams) should multiply your tonnage say five to ten fold", (see his report.)

The quality of the coal is anthracite. An official analysis made by Mr. J. O'Sullivan, F.C.S., of Vancouver, (Mr. O'Sullivan was for 26 years Assayer with Messrs. Vivian & Sons, Swansea) of four samples handed him by Mr. Campbell-Johnston gives the following result:

Vancouver, B.C., November 16th., 1910.

Analysis of four Samples of Anthracite Coal received from
R. C. Campbell-Johnston, M.E.

	No. 1	No. 2	No. 3	No. 4
Hydrosopic Water.....	4.0%	4.0%	4.5%	4.5%
Volatile Combustible Matter...	5.0	5.1	4.5	3.5
Fixed Carbon.....	82.0	82.6	84.0	83.5
Ash	8.0	7.5	6.0	7.5
Sulphur	1.0	0.8	1.0	1.0
	<hr/>	<hr/>	<hr/>	<hr/>
	100.0%	100.0%	100.0%	100.0%
	<hr/>	<hr/>	<hr/>	<hr/>
B. T. U.	14,214	14,216	14,318	14,260

(Signed) ..J. O'SULLIVAN, F.C.S.

In June, 1911, a large party was sent in by the syndicate under the direction of Mr. R. C. Campbell-Johnston, having as assistant Mr. G. F. Monckton, F.G.S., a capable geologist and mining engineer, returning in November. During the course of the work, but a considerable time before work was stopped, an examination was made by Mr. James McEvoy, B.A.Sc., late geologist and mining engineer to the Crow's Nest Pass Coal Company, formerly Dominion Government Geologist; and thus, separate reports were written by these three experts. It will be noted that Messrs. Campbell-Johnston and Monckton were at the coal field during the entire progress of the work, while Mr. McEvoy made his last visit there a considerable time before the work was given up for the season. Therefore, most of the work done up to Mr. McEvoy's last visit consisted in prospecting for and uncovering the seams so discovered, while the work done from that last visit to the end of the season consisted in driving deeper on the seams and so, in some instances, reaching deeper and farther away from the zone of influence of surface moisture.

These three experts are unanimous as to the field containing enormous tonnage of high grade fuel in the form of many thick, commercial anthracite seams of hard smokeless coal, Mr. Campbell, Johnston estimates the quantity at 1,141,440,000 tons, Mr. Monckton puts it at 1,133,400,000, and Mr. McEvoy is of opinion that the portion of property examined by him (much less than half) contains the enormous quantity of 288 million tons. The second season's work has, briefly, opened up the following seams:

In the Upper Coal Measures, three seams with a total thickness of 13½ feet.

In the Lower Coal Measures, eight seams, five of which with a total thickness of 34 feet, while the other three seams and also a number of smaller seams and other seams insufficiently tested nearly double this thickness.

Assays of the coal show: (from the mixed samples obtained in 1911)	Fixed Carbon...	74.00%	to	86.74%
	Volatile	3.5	"	13.51
	Sulphur	0.02	"	1.0
	Ash	5.0	"	13.0
	Hyd. Water....	3.5	"	4.5

The samples tested in 1911 were taken from moist and dirty surface workings, and were not so good in analysis as those examined in 1910, which will, it is expected, be equalled or excelled when the property is operated. But even the worst of these samples gives far more fixed carbon than the best of the bituminous coal mined in Canada, which as a rule gives less than 53 per cent. of fixed carbon.

Since the examination by Mr. McEvoy the Company's property has also been examined by Mr. Gustav Grossmann, a distinguished Mining Engineer of Pennsylvania, whose report confirming, as far as the extent of his examination would allow, the reports of Messrs. Campbell-Johnston, Monckton and McEvoy, will be found annexed.

The claims are held under lease from the Government of British Columbia subject to the mining laws of the Province and to the payment of an annual rental of \$4700 (\$100 per claim) and to a royalty of 10 cents per ton of coal mined.

The mining act of the Province permits the purchase of the land instead of its lease, at any time, upon payment of \$5 per acre, for coal, or \$10 per acre, for coal and surface rights.

The coal deposit is on the Skeena River 150 miles north of Hazelton which is on the Grand Trunk Pacific Railway. Hazelton is 180 miles from Prince Rupert, the Pacific coast terminal of the G. T. P. The Skeena is navigable for light draught river steamers from Hazelton to Prince Rupert.

The engineers are of opinion, after examination of the country, that a good line for a railway can be had from the coal deposit to ocean navigation at the mouth of the Naas River—about 50 miles north of Prince Rupert. This line would be about 200 miles long, but it will have very little adverse grade against the hauling of the coal, from its elevation of 3,600 feet to tidewater; it will develop a

valuable agricultural and timber country in the valley of the Naas River, and if the railway belongs to the company, there will be no freight to pay to another railway, as there would be to the G. T. P. if the connection were made at Hazelton.

The Syndicate have therefore obtained a charter from the Legislature of British Columbia at the session of 1911, for the construction of the Railway. This charter, which has also been acquired by the British Columbia Skeena Coal Co., Ltd., is a very valuable one, known as the Naas and Skeena Rivers Railway Company, and has been kept in force, in accordance with the conditions of the Railway Act of the Province. A reconnaissance of the country tributary to the coal basin has confirmed our expectations that the alternative lines provided for in the charter are feasible. The pass through Beirnes Creek or that through Carrier Creek is the most feasible according to present knowledge. The route via Naas Valley, although a little longer than that to Stewart on the Portland Canal, or a line to Alice Arm, would cover a better country, from an agricultural standpoint, implying a substantial traffic to the railway, besides the coal. In view of the feasibility of colonizing the main part of the Naas River Valley, the Provincial Government has reserved a large area of suitable land, and this would be traversed by our proposed railway. Large private interests have secured land adjoining the Government Reservation for settlement purposes.

Adjoining the property of the Company there are two other blocks of coal lands, belonging to Vancouver and Toronto Syndicates, which will help to increase the traffic of the proposed railway.

These deposits form the only known deposits of anthracite coal on the Pacific coast, and our engineer is of opinion that they are destined to supply all the Pacific coast cities in North America, and even South America, in competition with the Australian coal.

The coal is almost smokeless and should be very valuable for naval purposes, and also for commercial steamers which are now obliged to use bituminous coal, not nearly so clean.

If the Grand Trunk Pacific Railway's proposed extension to Dawson should be carried out, and the proposed line of the Canadian Northern from Stewart to the Peace River, both railways would pass through or near our property.



NAAS RIVER, POLING UP NEAR AYANCE.



SKEENA RIVER.

Steamers running between Prince Rupert and Hazelton before completion of railway. Courtesy of Lieut. Hope Scott, of the 12 Mounted Rifles—Overseas—Calgary and Quebec



CATCH OF TROUT. LEKELSE LAKE,
UPPER SKEENA.

Mr. Campbell-Johnston estimates that our property worked on an output basis of 900,000 tons per annum would give an annual profit of \$1,374,000.

He estimates the cost of equipping the mines with a full plant of 3,000 tons per diem capacity, at \$1,700,000.

The cost of the railway cannot be ascertained until the surveys are completed, but the reports of all three engineers indicate reasonable grades favorable to the coal traffic and no unusual obstacles except some canyons on the Naas River near Ayance. But even if the road should cost as high as \$40,000 per mile, the coal traffic alone, at a moderate rate of freight, should yield more than sufficient net earnings to pay the interest upon that cost. There will be considerable local traffic as the Naas and Skeena valleys become settled. Subsidies for the railway have been applied for to both Dominion and British Columbia Governments, and the former by Act of Parliament passed in 1912 have voted a subsidy of \$6,400. per mile, for the first 100 miles, to the Naas and Skeena Rivers Ry Co., a company incorporated by the British Columbia Legislature and controlled by the British Columbia Skeena Coal Company.

The total output of coal in British Columbia in 1915 (bituminous) was 2,089,966 tons. This consumption will be vastly increased when the two new transcontinental railways, which have just reached the Pacific coast, shall be in full operation and when new lines of steamers, now proposed, are put on the Pacific ocean.

This wonderful discovery of such valuable fuel as anthracite, and in such enormous quantity, becomes a matter of national importance to Canada, and when developed bids fair to make of British Columbia another Pennsylvania, and to cause the realization of the prediction so often made, that British Columbia, exempt from the payment of tribute to the United States for fuel—the fate of the older provinces—is the richest province of the Confederation.

Herein will be found a map showing the location of the coal field and the route of the proposed railway, also photos of the mine openings on the property and other photos of local interest. Extracts of the four mining engineers' reports are also reproduced.

The development of this property, like so many others, has been delayed by the war, but will soon, it is hoped, have an opportunity of being consummated.

Quebec, April 1917

EXTRACTS from Second Report of Mr. R. C. Campbell-Johnston, M. E., after completion of development work on the property of the British Columbia Anthracite Syndicate, on the Skeena River, B. C. in 1911.

To

The British Columbia Anthracite Syndicate

Head Office, Hochelaga Bank Building

QUEBEC.

GENTLEMEN:—

"It is just one year ago, namely, in November, 1910, after the writer's first trip on to your coal-lands, located near the headwaters of the Skeena River, that he handed you a report relating to the data at the time obtainable, as to the geology occurrence of coal, with its quality and quantity to date known, and other information gathered, as to the advisability of undertaking the development of this field. He told you that in his judgment this one could be made "the largest colliery with the highest grade coal on the Pacific Coast." (See conclusions: Page 34.)

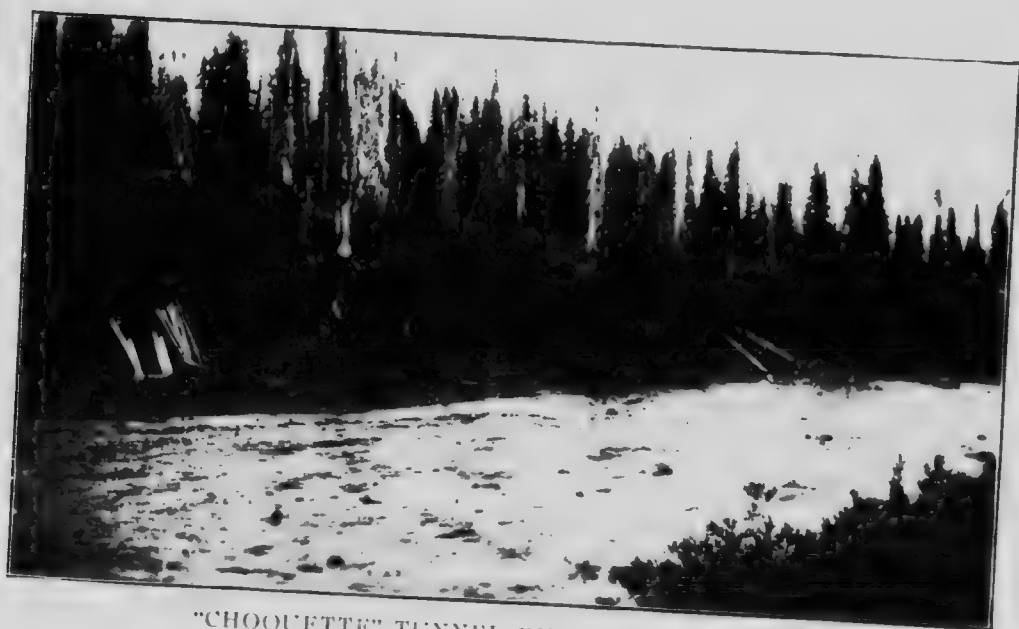
At that period, this was his matured professional judgment, based on the details at hand after a careful examination of property, as an experienced mining engineer. Your Syndicate afterwards put full confidence in his assertions and conclusions, provided all the funds which he asked for to explore and develop the property, and engaged him to go back this summer at the head of a very large expedition, to make good his words by actual proofs, substantiation, and the opening up of the seams.

In this second report now handed to you, it is shewn that the hopes then expressed and the optimism originally felt, have both, as conceptions, fallen far short of actual facts now proven to exist in situ.

These same facts are vouched for, and corroborated by Mr. James McEvoy, B.A.Sc., late Geologist and Chief Engineer of the Crow's Nest Pass Coal Company; and also Mr. Geoffrey Francis Monckton, Fellow Geological Society of London; and again by Mr. G. S. Malloch, of the Geological Survey of Canada, Department of Mines, Ottawa, who is embodying the items concerning your property into the Government Report of Progress for this year, with



UP BEIRNES' CREEK FROM MOUNT ALEX.



"CHOQUETTE" TUNNEL ON BEIRNES' CREEK.



FIRST UPPER SLAM ON BEIRNES' CREEK.



"BENOIT" SEAM.

maps, traverses, geological section and full exhaustive particulars. The writer, as your Advisory and Consulting Engineer, now begs to hand to you this full account of the work carried out during the summer; second, the splendid results achieved; third, the many large coal seams opened which (with your permission yet to be obtained) were named after some of your syndicate, the idea being to continue this precedent as the other seams were located. These seams, as designated, from their continuity, quality and sizes, will be household words in the coal markets of the world for centuries to come.

After hard tramps over the summits of ranges, some further facts have been discovered as to the preferable railway route, which will shorten the distance to tidewater.

The writer must again congratulate you on your foresight and business acumen in securing, pioneering and financing one of the world's finest money makers left laying dormant for the moment. Many new photos are presented with the report; new geological sections; and careful analyses of the new seams found.

The Dootee and Tzahnny Forks of the Skeena, heading away northeast from lakes on the Divide from the headwaters of the Clua-Tahn-Tahn string of lakes, are supposed to joint the main Skeena before the entrance of the Sustut River from Bear Lake and Fort Connolly (an old deserted Hudson Bay Post). By going through these passes a route to the Peace River and Edmonton can be found, opening a productive country, and one with seeming easy grades for railway construction.

The best, shortest and also, apparently, the most feasible route for a railway, from your property to the seaboard, will be up Beirnes Creek from the Skeena River, starting from the flat 150 feet above the creek bed, or 3,650 feet about sea level. Here is where the large tipple and crushers will be permanently installed to keep on hand a store apart of each kind from the various seams, also the stereotype market sizes broken from the crushers to suit the prevailing tastes of the various consumers and where all coals as won can be assembled, and a shunting yard with miles of trackage can conveniently be laid out and put in use. From this central point for say ten miles, or as much longer as the maximum grade decided on requires, is an easy profile till the height of the ridge is reached, dividing the headwaters of Beirnes and Anthony Creeks, the latter a tributary of the main south Fork of the Naas River.

This spot is 4,350 feet above sea level, but could be reduced 150 feet, say, by a short tunnel, in length perhaps 600 feet, or reduced more by a longer one. So from 3,850 feet at the mine to 4,200 feet at the divide of land is a rise of 550 feet in ten miles, an adverse grade for coal bound for the coast, 1 in 86, or 1.15 per cent. And from there on is a water grade, namely, all down hill, enabling the use of long trains with one locomotive and one ordinary crew of train hands.

The whole route will be less than 200 miles in all from mine to mouth of Naas (Nasoga Gulf).

Careful enquiries as to prevalent gales and winds; depth of channels; rise and fall of tides; wharf facilities for rapid loading into ships without grinding the coal to dust; all facts discovered point to Nasoga Gulf as the most suitable harbour.

Alice Arm has an adverse grade from the Naas.

Stewart, on the Portland Canal is too far inland to be convenient for shipping in a hurry, and this route would call for a very long tunnel under the Bitter Greek Glaciers, and heavy terminal constructions on the mudflats to reach deep water at low tide are a necessity.

By tapping the length of the Naas valley will give return loads to your railroad, as this valley is being acquired, settled and farmed, and large interests are concerned there to build up its trade and population.

On the subject of geology, the year's development has thrown much more minute light, as more time was given to take directions of dips, strikes, movements and irregularities, and to classify the characters of the strata exposed.

In describing the coal seams exposed and worked upon, Mr. Campbell-Johnston says:—

SEAMS.

The "BENOIT" seam lies directly under the main sandstone, close to the junction of Beirnes Creek and the Skeena River. It crosses the creek and was seen last year at low water in the bed. This year the water was very high, so that no coal was apparent here. Therefore deep cuts through the gravel beds were driven to get to solid rock formation. These in length towards and parallel to the seam measured 184 feet with 12 feet deep at face, and necessitated a great width like a railway cutting to prevent the sides fall-

ing on the men: then the big cut in the photo, made when the seam was reached in a pit, is 61 feet long from the creek. At the end, the ground was too deep to stand, so a tunnel was carried in and timbered heavily for 11 feet till the floor of the coal seam was reached. Then a slope on the floor was sunk 14 feet deep to catch a solid rock roof. Sufficient work on the actual seam has not yet been accomplished to speak with accuracy of the normal width and quality. It would appear that the seam will be normally six feet thick, when it finds itself. Six analyses show 71 to 84 per cent of fixed carbon.

On the "SCOTT" seam, as shown in the annexed photo, a wide cut was put in for 35 feet in length, till timber had to be used. The cut and tunnel were kept double compartment that is 14 feet wide for 16 feet to catch full width of seam on slope. Then a single tunnel was carried on in all 42 feet long.

At the end, as work ceased, this seam was ten feet wide, and this is wider than when the other engineers inspected it. It is a splendid seam to work in the future and get a high percentage of extraction of clean hard coal.

The contents of all the seams harden, and bear the severest of handling, as the "GARNEAU" coal does already, when the coal is taken far from surface and meteorological influences.

In the slope, the "GARNEAU" seam shows up to 36 inches of clean coal, without any clay or shale partings.

The "ROSS" seam.—On the east side a cut was put in in coal for 36 feet, then a cut to the north for 34 feet, in coal and shale, and at the end a timbered tunnel for 6 feet in solid coal. Analysis 80.94% fixed carbon. The normal "run of mine" will assuredly improve.

The "PELLETIER" seam.—A large shaft was sunk on the coal for 40 feet. This demonstrates a strong, high-class fuel, six feet thick, at bottom, of clean coal, but high in ash till the influence of surface water is past. All the samples taken were dirty samples, full of ash and pyrites.

Memo:—Mr. Campbell-Johnston submitted samples of coal from these different seams—not fair samples of what may be expected for the reasons given above—to Mr. O'Sullivan, the official Assayer, at Vancouver, with the following result:—

Vancouver, B.C., Nov. 29, 1911.

Analysis of six (6) samples of Anthracite Coal received from Mr. R. C. Campbell-Johnston, M.E.

	"Pelletier"		"Benoit"	"Gar-neau."	"Scott."	
	A.	B.			A.	B.
Water	4.0%	4.0%	4.5%	4.0%	4.5%	4.5%
Volatile Matter.	4.0	7.0	4.6	4.0	4.5	6.5
Fixed Carbon..	71.0	60.0	80.1	82.5	77.0	78.0
Ash	20.0	28.0	10.0	8.5	13.0	10.0
Sulphur	1.0	1.0	0.8	1.0	1.0	1.0
B. T. U.	11,340	10,374	12,852	13,455	12,323	12,843

J. O'SULLIVAN, F. C. S.,

ASSAYER.

(Assayer for 26 years with Messrs. Vivian & Sons, Swansea.)

Mr. Campbell-Johnston also gives the following as the analysis of different kinds of Pennsylvania anthracite (samples being from coal in marketable condition) :—

	Moisture	Volatile Combust- ible Matter	Fixed Carbon	Ash	Sulphur
Pennsylvania:					
Average of 30 carloads. (run of mine)	3.30%	3.80%	84.00%	8.40%	0.50%
Cameron Colliery:					
Lump	1.81	6.18	86.74	4.50	0.75
Slack	2.28	6.62	75.72	14.18	1.19
Slack	3.17	6.84	76.63	11.99	1.35
Lehigh Coal, market sizes:					
Egg	1.72	3.51	88.49	5.66	0.60
Stove	1.42	4.15	83.67	10.17	0.57
Nut	1.73	4.04	80.71	12.66	0.84
Pea	1.70	3.89	79.04	14.54	0.69
Buckwheat	1.69	4.05	76.91	16.62	0.71
Lackawanna	3.13	6.79	81.71	8.01	0.35
Lykens Valley	2.27	8.83	78.83	9.39	0.67
Wilkes-Barre	3.47	3.67	83.97	8.64	0.25
West Virginia:					
Pocahontas	1.02	13.59	80.10	5.15	0.14



"SCOTT" SEAM, DOUBLE TUNNEL, ALL IN COAL.



"GARNEAU" SEAM.



"PELLETIER" SEAM.

Work on Anthracite Creek was carried out more to fulfill the requirements of the Coal Act. However, the results were very satisfactory. The lowest seam (a) carries $2\frac{1}{4}$ feet coal; shale 15 inches; coal 18 inches; shale 18 inches; coal 1 foot; in all 4 feet 9 inches clean coal. The next (b) seam found at some distance gave 3 feet of clean coal.

Above these is another (c) $5\frac{3}{4}$ feet of clean coal with small shale parting giving over 86% fixed carbon.

The analyses of these seams were:—

	Fixed Carbon	Volatile Matter	Sulphur	Ash
(a)	71.76%	13.51%	0.16%	14.57%
(b)	73.36	6.78	0.12	19.74
(c)	86.74	6.98	0.13	6.15

TONNAGE OF COAL.

Last year, to be conservative, the writer calculated a foot-acre of coal at 1,000 tons. Most engineers are calculating a foot-acre at 1,500 tons. In order to make your property stand on the same footing as other properties, the calculations will be based on the larger amount.

	TONS.
"BENOIT" Seam will carry per square mile 5,760,000 tons, and underlie, say, 30 square miles. Gross tonnage	172,800,000
"SCOTT" Seam will carry per square mile 7,680,000 tons, and underlie 32 square miles. Gross tonnage	245,760,000
"GARNEAU" Seam will carry per square mile 2,880,000 tons, and underlie 32 square miles. Gross tonnage	92,160,000
"ROSS" Seam will carry per square mile 9,600,000 tons, and underlie 32 square miles. Gross tonnage	307,200,000
"PELLETIER" Seam will carry per square mile (if horizontal), 5,760,000 tons, and underlie 34 square miles. Gross tonnage	195,840,000
LOWER ANTHRACITE Seam will carry per square mile 3,840,000 and underlie 13 square miles. Gross tonnage	49,920,000

<i>MIDDLE ANTHRACITE Seam</i> will carry per square mile 2,880,000 tons, and underlie 9 square miles.	
Gross tonnage	25,920,000
<i>UPPER ANTHRACITE Seam</i> will carry per square mile 5,760,000 tons, and underlie 9 square miles.	
Gross tonnage	51,840,000
<hr/>	
Total Gross Tonnage.....	1,141,440,000

After his work for the year, the writer congratulates you on the superb property you hold, and leaves it for you to finance, organize and bring to a most successful going concern, one paying ample dividends.

RONALD C. CAMPBELL-JOHNSTON,
Mining and Metallurgical Engineer.

Vancouver, B.C., November, 1911.

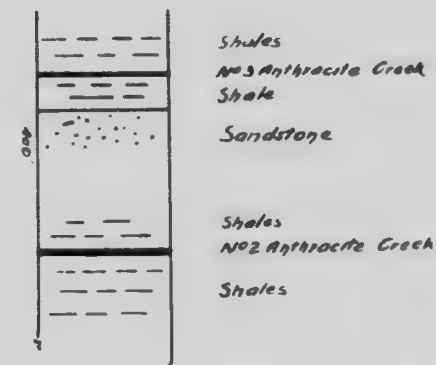


PACKTRAIN IN CAMP—SEVENTY HORSES.



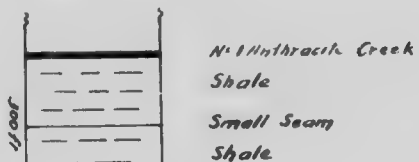
SYNDICATE'S COMMISSARIAT DEPARTMENT LOOKING FROM OFFICE.

Upper
Coal
Series

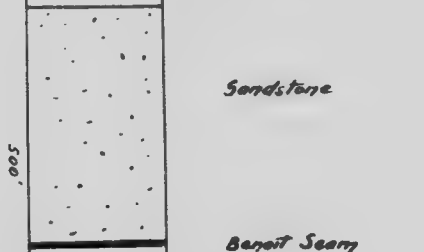


Vertical
Distance to Upper
Seams not
corrected by traverse

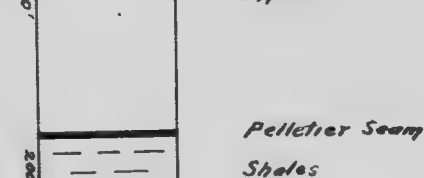
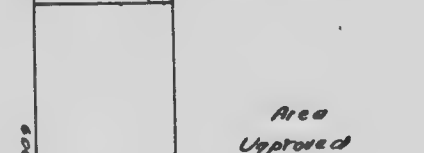
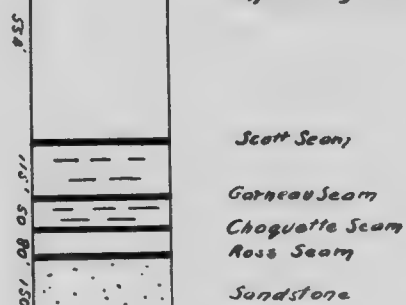
Main
Sandstone



VERTICAL
SECTION
COAL MEASURES
PROVED



Lower
Coal
Series



Area
Unproved
R.G. Campbell-Johnston
G.F. Monckton

EXTRACTS from Report of Mr. Geoffrey Francis Monckton, M.E. Fellow of the Geological Society of London, who spent about four months on the property of the British Columbia Anthracite Syndicate on the Upper Skeena, B.C., in 1911.

"The property can be easily developed by railroads. It lies in the valley which is most convenient for a railroad from the G. T. P. on the lower Skeena to the Yukon, and can also be easily reached by a line following one of the branches of the Naas, reaching the sea either at Stewart or some other point on the Portland Canal, or else near the mouth of the Naas.

The Beirnes Creek passes are respectively 4,200 and 4,300 ft. and are about fifteen miles distant. The main parts of the property being at an elevation of about 3,600 ft., this would entail a grade against the load of rather less than 1 per cent for the first 15 miles, but for the remaining mileage to the sea there would be an average grade in favour of it of 32 ft. to the mile. The up grade being so short it would be easy to haul short trains up to the divide and having assembled them there to take very long trains thence to the sea with one locomotive, which would mean cheap hauling.

The strata present a regularity which is rarely found in association with anthracite outside of South Wales and Pennsylvania.

On account of the rise in the strata to the north east as shown in the sections, it will be possible to work an area on this property of approximately 12 square miles without machinery by the simple expedient of driving tunnels into the mountain a little above the level of the Skeena so as to intersect the Benoit and the other seams immediately below it in turn, and each of these seams can then be worked to the rise as the management may desire. This would mean a saving in capital of about \$600,000, as compared with working the property on the west side of the Skeena by means of shafts and would result in additional economy in the actual cost of mining.

The seams so far found on the property which are on Beirnes Creek, beginning with the top one, are the Benoit, Scott, Garneau, Choquette, Ross and the Pelletier.

(1). The BENOIT contains 5 ft. of clean coal with about 12 inches of shale near the top. I believe more coal will be found in the roof when it can be proved.

(2). The SCOTT has been driven on for a length of 77 ft., in all and shows from 5 ft. 4 in. to 6 ft. 8 in. of clean coal. It has only one seam of shale which occurs near the middle and is usually about 4 inches wide.

(3). The GARNEAU carries from 2 ft. 6 in. to 3 ft. of clean coal and has no shale in it.

(4). The ROSS which was the last seam discovered on Beirnes Creek and was very difficult to open up on account of the swampy ground, contains about 9 ft. 6 in. of clean coal divided as follows, beginning at the top:—

Coal and Shale.....	2 ft. 6 inches.
Coal	4 ft.
Shale	3 ft.
Coal	8 inches.
Shale	18 inches.
Coal	1 ft. 6 inches.
Shale	18 inches.
Coal	1 ft. 3 inches.

The top 2½ ft. is considerably decomposed and it is difficult to estimate it accurately as yet. I do not think it will be found to contain more than 6 inches of shale where it becomes solid.

(5). The PELLETIER has been sunk for a depth of 45 ft. and contains 5 ft. 2 in. of clean coal with which is associated a little shale. I am convinced from the appearance of the open cut that there is more coal immediately above it, but there was no time to examine further.

On Anthracite Creek we have three seams overlying this sandstone.

(1). The lowest, we have proved to contain from the top down—coal 2 ft. 3 inches, shale 15 inches, coal 18 inches, shale 18 inches, coal 1 ft., in all 4 ft. 9 inches clean coal. This is about 300 ft. vertically above the sandstone.

Beyond this is an area on the upper part of the stream which is unproved, but which on adjoining properties contains several seams.

At a distance of 500 yards from No. 1 we find:—

(2). A seam containing 3 ft. of clean coal without any dirt partings. There are indications of another close to it, but it might be the same, having slipped down a little in the face of the cliff.

(3). Two hundred yards above is another with 5 ft. 9 in. of clean coal with one shale parting about 2 inches thick, discovered two days before work stopped.

I estimate that the eight seams of coal examined by me on this property contain 1,133,400,000 tons.

Before the gross possible contents of these seams can be accurately estimated a large amount of work must be done. At the same time it must be remembered that in order to allow for the extra amount of coal existing on a given area where the seams are inclined as they are here at an angle of 25 degrees and 30 degrees, a further 15 per cent must be allowed. Also there are two other seams up Beirnes Creek, one containing 6 ft. and the other nearly 20 ft. of coal as far as may be judged, which almost certainly underlie this property.

Samples taken by me from the property have yielded the following returns:—

SEAM	Ash	Sulphur	Volatile Matter	Fixed Carbon	Water
Anthracite I.....	19.74	.12	6.78	73.36	
Anthracite II.....	6.15	.13	6.98	86.74	
Ross	8.96	.77	9.33	80.94	
Benoit	15.0	.8	6.6	74.6	3.0
Scott	10.0	.8	4.6	81.10	3.0

The cost of equipment for this property for an output of 2,000 tons a day would be about \$1,000,000 including 200 houses for the men, if it were to be developed by shaft sinking on Beirnes Creek or Anthracite Creek. If, however, it were developed by tunnelling into the mountain and working on the north east area, only about \$300,000 would be required.

The length of railway may not exceed 150 miles unless it is decided to carry it to some point further out on the seaboard than those at present in view.

There would be a market even now for domestic supplies along the Pacific Coast for 500,000 tons, as the rainy season in Washington, Oregon and British Columbia, causes as great

a consumption of coal as does a hard winter, and if hard coal was available baseburners would be installed instead of the present unsatisfactory furnaces, and the dirty bituminous coal now available would not be used in houses. There should also be a market for 750,000 tons for marine use at present. Population is increasing so fast in the west that these figures will be doubled in five years.

For marine purposes anthracite is an absolute necessity on account of its freedom from tar.

G. F. MONCKTON, M.E.

Duncan's, B.C., November, 1911.



RAILWAY DIVIDE ON BEIRNES' CREEK.



SECOND EXPOSURE

Another Upper Seam on Beirnes' Creek. Mr. G.
Malloch, of Geological Survey, measuring same.

EXTRACTS from Report of James McEvoy, Geologist and Mining Engineer, Member of the Institution of Mining and Metallurgy, London, Eng, formerly Member of the Staff of the Geological Survey of Ottawa, on the property of the British Columbia Anthracite Syndicate, on the Upper Skeena River, B. C.

Toronto, Nov. 21st, 1911,

To The B. C. Anthracite Syndicate of Quebec,

DEAR SIR:—

“Herewith I transmit to you my report on your claims on the West Fork of the Skeena River about Ground Hog Mountain.

Questions such as the cost of coal and markets have not been dealt with, as these are always speculative and especially so in the case of a new field.

I have no doubt, however, but that a large market can be found for this coal and at good prices. The domestic market will be the most important at first and in this connection as the coal is practically smokeless, and as it will not make dust and dirt all over a house in the way the soft coals of the West invariably do, it will be self-advertising.

The total cost of mining given by Mr. Campbell-Johnston, at \$2.14 is if anything rather high, at least for the first four or five years. However, time alone will tell exactly, as there are always special problems of mining in each individual colliery.

I would suggest that the coal should not be sold for less than \$4.00 per ton 2,000 lbs. F. O. B. the mine. This is mentioned because our experience has shown that the most common mistake made in starting new collieries in the West has been to sell the coal at too low a figure.

Care should be taken to have proper screening and picking table facilities installed before the coal is placed upon the market so that it may have a good name from the start.

The cost of a plant to operate when fully equipped, will be about \$1,500,000., but the expenditure of this amount will spread over three or four years. In fact it would be wise to have the first tippie a temporary home-made one, so that experience may show just what is required for a permanent structure.

RAILWAY ROUTES.

It is particularly worth mentioning that information gained since the printing of the maps referred to shows that there is a feasible railway route to Pacific Coast tidewater shorter than any of those previously mentioned.

The writer visited the property three times during the months of August and September this year. Prospecting work was going on under the direction of Mr. Campbell-Johnston and was still carried on for three or four weeks after the last visit.

GEOLOGY.

A partial section was measured by Mr. Malloch, Dominion Government Geologist, on the mountains about a mile south of the southwest corner of the field. This section comprised a thickness of 2,700 feet and contained 8 seams of coal of which 7 seams aggregating a total thickness of 23 feet of coal were contained in 800 feet of measures.

Another partial section, believed to be a continuation downward of the one just mentioned, gave three additional seams of coal in a thickness of 378 feet of measures. This gives 11 seams with total thickness of coal of 35.9 feet in 3,080 feet of measures.

On the property itself one seam is opened up showing a greater thickness than any given in Mr. Malloch's section, and on an adjoining property to the south, two seams are opened showing considerably greater thicknesses. So that it may fairly be assumed that the total thickness of coal on the property will at least be equal to that given in the geological section.

There are no intrusions of eruptive rocks in the field and there is no evidence of the existence of either volcanic flows or eruptives in the neighborhood.

The principal work done is on a tributary stream of the West Fork of the Skeena River about the middle of the property. This stream is called West Fork Creek on your Key Map but is better known as Biernes Creek.

Near the mouth of this stream one seam (the Benoit Seam) was naturally exposed by the water's edge.

Open cut trenches on a large scale were made in the gravel and clay banks to bed rock with a result that six seams of coal were uncovered.

The seams dip N. 40 degrees E. Ast, at angles of 20 degrees to 30 degrees from horizontal.

No. 1. *BENOIT Seam*—

Coal, 0 ft. 3 in.

Shale, 0 ft. 6 in.

Coal, 3 ft. 0 in.

In the 3 feet of coal there is a soft shale parting of 3 inches thickness. This is so soft that it will all go into the slack and leave the lump coal free from its impurity. All the rest of the coal is bright and very hard.

No. 2. *SCOTT Seam*—

Coal, 6 ft. 0 in.

In the top part of this seam there are two bands of shale parting 2 inches and 3 to 4 inches in thickness. These partings are also soft and will no doubt be taken out in the slack, if not they can be separated on the picking table.

No. 3. *GARNEAU Seam*—

Coal, 2 ft. 3 in.

With one band of soft shale parting 2½ inches thick.

No. 4. *CHOQUETTE Seam*—

Coal, 2 ft. 0 in.

This seam was only just uncovered and only the decomposed surface could be seen.

No. 5. *ROSS Seam*—

This seam also had only just been uncovered and only the decomposed surface could be seen. It appeared to be

Coal, 1 ft. 0 in.

Shale, 1 ft. 6 in.

Coal, 0 ft. 9 in.

but further work may have shown a different section.

No. 6. *PELLETIER Seam*—

Coal, 3 ft. 2 in.

Notwithstanding the high percentage of ash, given later in the assays, this seam gives promise of yielding the best quality of coal for select domestic trade.

The extension of these seams to the north and south has not been yet traced owing to the heavily drift covered nature of the surface. To the south, however, sandstone ridges coming to the surface show that the coal extends regularly in that direction. To the

north there are no exposures for 2 or 3 miles, then the rocks of the coal measures are seen on the river bank striking in the same direction but turned up at angles of 80 degrees to vertical. This evidence taken in connection with the general altitude of the rocks running with the general trend of the valley indicates that the coal measures are continuous through the property to its northern limits.

The distance to which these seams run downward, that is to the dip to the northeast, must remain a matter of uncertainty until bore holes have been put down, but from what can be seen of regularity of the measures, there does not appear to be any doubt but that they will continue regularly for a considerable distance.

Whether these seams after they have dipped down to the bottom of the basin will turn up gradually, thus forming a complete synclinal trough or will come suddenly up with either a sharp fold or fault and form another independent working basin beyond is yet not absolutely proven. What is seen, however, around Anthracite Creek, near the south end of the property tends to show that it will be a complete syncline.

So far, the only estimate of tonnage on the property is that for the immediate vicinity of Biernes Creek, but it is not to be inferred that this amount is all the coal that can be counted upon with certainty.

There is no reasonable doubt that practically, if not entirely all the property is occupied by coal measures. The covered character of the surface prevents the determination at present of the details of the geological structure but the coal measures are seen on the mountains on each side of the valley.

An estimate of the total coal tonnage at present would be only a geological calculation and as such subject to criticism. It could not be cast aside as unproven as a whole but might fairly be open to criticism as to a percentage. A specimen calculation of the above sort may be given, not to be taken as a statement of coal in sight but as a very conservative geological estimate of the coal tonnage favourably situated for mining.

Taking out of the total thickness of 35.9 feet only 15 feet of coal and out of an area of 47 square miles take only 20 square miles as favorably located, then $20 \times 640 \times 15 \times 1500 = 288$ million tons (of 2000 lbs.) or 4000 tons a working day for 240 years.

QUALITY OF COAL.

The coal seams were exposed by the removal of the covering of clay and gravel and only surface coal could be seen. At the time of the last visit, slopes had been started but they were only down 3 or 4 feet so that the coal was still very dirty with clay introduced by the surface waters.

The following assays of seams Nos. 1, 2, 3 and 6 were made by Milton Hersey Co., Ltd., of Montreal:—

MARK	Moisture	Vol. Comb. Matter	Fixed Carbon	Ash	Coke	Sulphur
No. 1.....	0.61%	7.83%	60.74%	30.82%	91.56%	1.38%
No. 2.....	1.29	10.24	68.98	19.49	88.47	0.59
No. 3.....	0.66	8.10	56.53	34.71	91.24	0.33
No. 6.....	0.81	7.97	65.57	25.85	91.22	1.20

These assays show, as was to be expected, very high in ash. It is impossible to say exactly how much the ash will be reduced when clean coal is reached at depth, but undoubtedly there will be a great reduction.

The coal has a crystalline fracture, is very bright and hard. without any pronounced jointage planes. It is not at all crushed or slickensided and as a consequence it will be mined in *strong hard lumps* and will make little slack.

It burns very well in a blacksmith forge, giving an intense heat, so great is the heat in fact that if a steel implement is left a few minutes too long in the fire the *steel will be melted*. The flame is almost colourless and smokeless.

As to whether the coal should be called an anthracite or a semi-anthracite there will be some doubt, as there is no universal standard of composition and physical properties as yet adopted. Under the most rigid classification of Pennsylvania it would be a semi-anthracite, but under the British classification on the other hand, it would be called anthracite.

Note—It will be remarked that Mr. McEvoy only saw surface coals—so that this analysis gives a percentage of ash which, with clean samples, will be changed to fixed carbon, to a great extent.

Professor Donald, Official Analyst, of Montreal, gives an analysis of 78.70% of fixed carbon.

It is distinctly different from the so-called anthracites or semi-anthracites which have so far been placed upon the market in Western Canada, for whereas these latter are crushed and slickensided and yield a very large percentage of slack, this coal is *entirely free* from these objectionable features.

The effective heating power of coals is not proportional to their British Thermal Unit contents, for in the case of soft bituminous coals a considerable percentage escapes unconsumed through the smoke stack. In the case of your coal, waste from this cause will be reduced almost to a minimum and with proper fire-box and grates, its effective heating power will be *greater than any of the bituminous coals*. It will therefore effect a saving in both storage space and amount of freight charges.

There is an abundance of good timber on the property, Spruce, Balsam and Hemlock of suitable sizes for mine timbers.

The water supply is also abundant both in the West Fork itself and in the tributary streams.

The writer has no financial interest whatever in the property herein reported upon.

JAS. McEVOY,

Member of the Institution of Mining and
Metallurgy, London, Eng.

Toronto, Nov. 20th, 1911.

REPORT OF GUSTAV GROSSMANN, Ph. D.

MINING AND METALLURGICAL ENGINEER.

Vancouver, B.C. November 24th, 1913.

*British Columbia Anthracite Syndicate,
of Quebec.*

GENTLEMEN,—

During my visit to the Groundhog Mountain coalfield (from May until October, 1912,) for the purpose of investigating its economic value, as far as an exhaustive superficial examination and inspection of its various exploration workings could disclose. I also examined, among others, the holdings of your Syndicate.



TROUT RIVER, LEKELSE LAKE, UPPER SKEENA.



LEKELSE LAKE, UPPER SKEENA.



THE NAAS RIVER, SHOWING THE RICH SOIL FORMATION.



RICH SOIL FORMATION, NAAS RIVER VALLEY, BETWEEN
AYANCE AND GREENVILLE.

Without going into details as to geology, transportation facilities, etc., a general synopsis of the merits of your property may be given, as follows:—

47 Sections, 30,080 acres, situate in 56° 45' north latitude and 128° 15' west longitude, in the western part of the Groundhog Mountain coalfield, a considerable portion of which is favorably located as containing coal seams of superior quality, and of workable dimensions.

Number of workable seams uncovered—Six, with an aggregate thickness of 28 feet.

Quality of the Coal: "Anthracite". Very bright and hard and of excellent steaming quality, comparing favourably with the Pennsylvania product. As the coal breaks in large lumps, it will stand transportation over long distances.

Quantity of Coal: Sufficient development work has not been done to produce definite evidence as to what may be calculated as the workable coal resources of the whole property but, in my judgment, they should be very large; inasmuch as the property is not thoroughly explored, new discoveries of commercial coal seams are likely to be made. In any event, it is evident that there is more than sufficient coal here to warrant the building of a railway for its development.

No extraordinary or unusual engineering difficulties will be encountered in the opening up of this property, which should be capable of producing a large daily tonnage of a superior quality fuel, and I would consider the development of this group of coal claims an inviting business proposition, which should be attractive to investors.

Yours truly,

GUSTAV GROSSMANN.

and in another report Mr. Grossmann says:—

"There is no coal mined in the Dominion of Canada which is of the same or similar quality as this either in physical or chemical properties, and so far, no such coal has been discovered in commercial quantities in the Dominion. Practically speaking, there is no Anthracite west of Pennsylvania in the United States. Judging by the amount of Pennsylvania Anthracite that is used in the United States and Canada, it may readily be seen what a gap in the coal supply in the west will be filled by the opening of this field.

"The smokeless character of this coal should open for it a large market in the coast cities where the smoke nuisance is prohibited. Its cleanliness for household use and its steady burning properties, should bring it into general use for domestic purposes. For steam purposes, with proper grates, this coal, although lower in British Thermal Units than a bituminous coal, will give a greater amount of effective heat. This is due to the fact that the great waste of unconsumed hydro-carbons in the case of a bituminous coal is avoided, or at least reduced to a minimum, with Anthracite.

"As illustrating the comparative importance of such an area as this, it may be stated that this area alone probably contains as much coal—possibly ten times as much—as is found in all the present known coal areas in the Province of Nova Scotia.

"In giving you this information, I beg to point out that I am not in any way concerned with the disposal of properties on the Groundhog Coalfield, or elsewhere, but confine myself absolutely to my professional work of examination and report. At the same time, having traversed the whole Groundhog Coalfield, I am in a position to point out to possible capital interested in this new district, such grounds as are really worthy of consideration, as the quality of the coal varies very much, and not all is claimed so to be, is true 'Anthracite.'"

(Signed) .GUSTAV. GROSSMANN.

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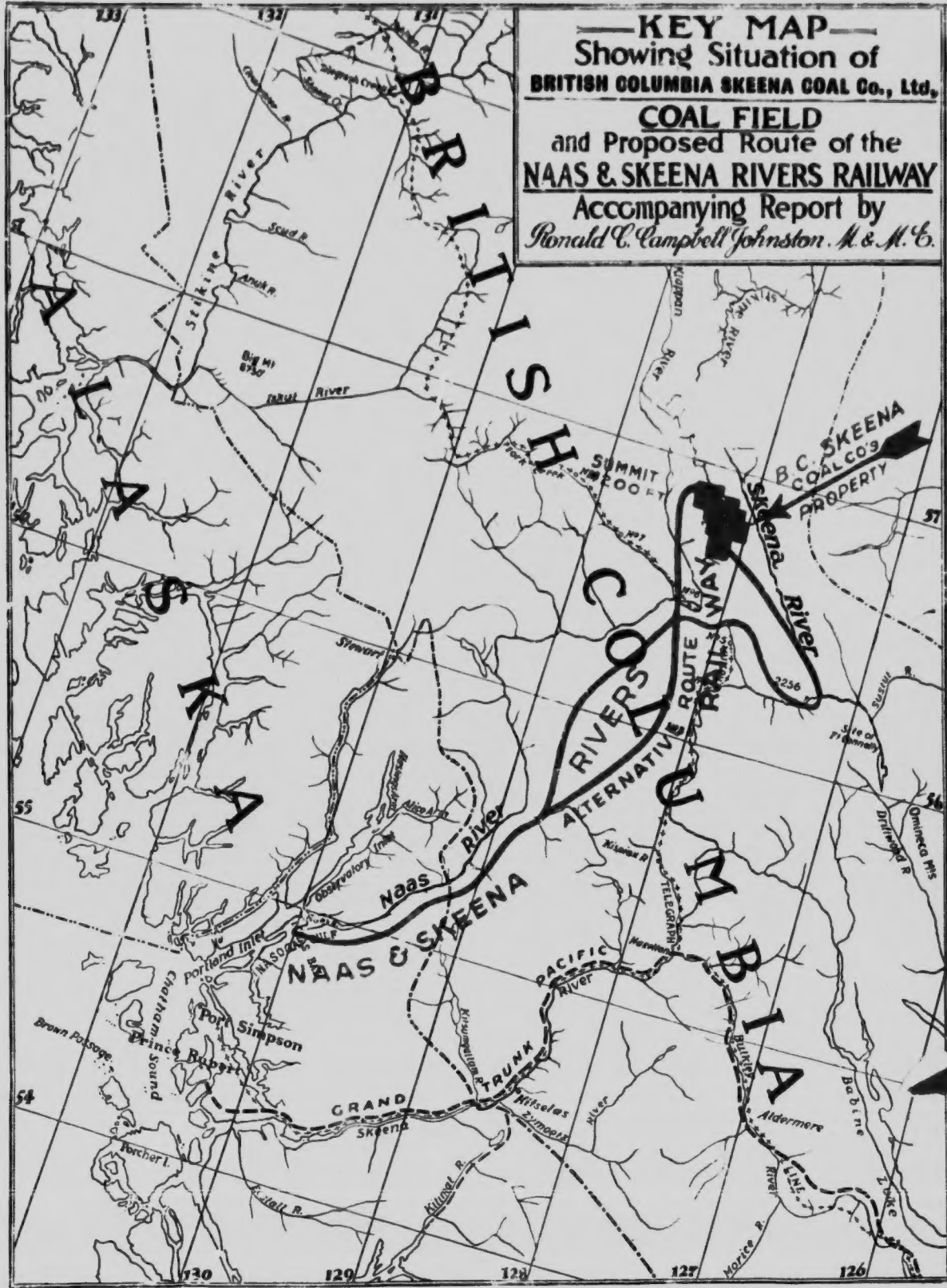
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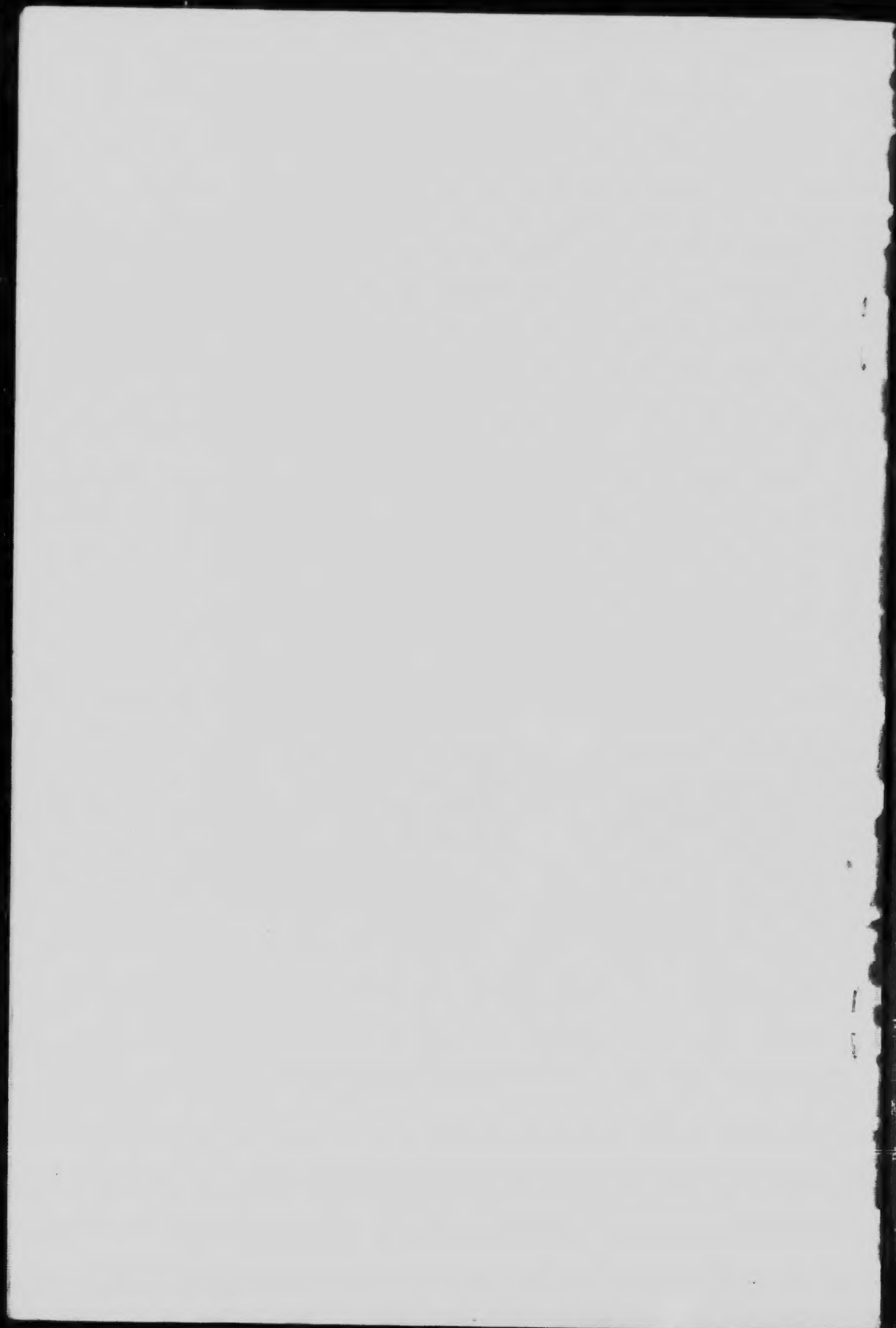
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(Signed) GUSTAV GROSSMANN.

—KEY MAP—
 Showing Situation of
BRITISH COLUMBIA SKEENA COAL Co., Ltd.
COAL FIELD
 and Proposed Route of the
NAAS & SKEENA RIVERS RAILWAY
 Accompanying Report by
Ronald C. Campbell Johnston. M. & M. E.





The British Columbia Skeena Coal Company, Limited.

INCORPORATED BY DOMINION OF CANADA
LETTERS PATENT

CAPITAL - - \$1000,000

**Controlling 30,000 acres of Anthracite Coal lands
situated at Ground Hog Mountain, B.C. on the
head Waters of The Skeena River.**

HEAD OFFICE, HOCHELAGA BANK., BLDG., QUEBEC, CANADA

DIRECTORS OF THE COMPANY

J. G. Scott.....	Quebec.....	Railway Manager.
John Theodore Ross....	"	Director, Royal Bank.
Gaspard LeMoine	"	of J. B. Renaud & Co.
Alex. Hardy	"	Broker.
Elzéar Baillargeon	"	Advocate.
A. E. Doucet	"	Civil Engineer.
Hon. N. Garneau, L.C..	"	Pres. Chicoutimi Pulp Co.
Hon. P. A. Choquette...	"	Senator.
Alex. Gauvreau, N.P....	"	Notary Public.
Léon Benoit	Vancouver....	Financial Agent.

President:

J. G. SCOTT,

Secretary-Treasurer:

ALEX. HARDY.

Solicitors:

BARNARD, ROBERTSON, HEISTERMAN & TAIT,
Victoria, B.C.

BELLEAU, BAILLARGEON & BELLEAU,
Quebec.

London Representatives:

B. NEWGASS & CO., LTD., BANKERS, 16 Gracechurch St.,
London, E. C.

Advisory Engineer:

R. C. CAMPBELL-JOHNSTON, M.E.,
Vancouver, B.C.

Bankers:

**THE ROYAL BANK
OF CANADA.**